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U.S. Patent Application Serial No. 10/565,156
Response to OA dated May 12, 2008

AMENDMENT TO THE DRAWINGS:

The attached sheets of drawings include changes to FIGS. 1-6 . These sheets replace the original drawing sheets for FIGS. 1-6.

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REMARKS

Claims 1 and 2 have been amended in order to more particularly point out, and distinctly claim the subject matter which the Applicants regard as their invention. The Applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated May 12, 2008.

In the Office Action, the title was objected to as not being descriptive. Accordingly, the title has been amended to read: BIMETALLIC PROBE WITH TIP END. Reconsideration and removal of the objection is respectfully requested.

The drawings have been amended to show the base end (120) of the probe, which is discussed in the original specification as having any shape (see at least page 7, lines 8-9).

The specification has been amended in view of the amendments to the drawings, in order to add references in the specification to the numeric indicator (120) of the drawings.

In the first probe of the present invention, the base part of the contact part is formed of a first material while the junction part of the contact part is formed of a second material having a different thermal expansion coefficient from that of the first material. The tip end of the base part is contactable with an electrode of the object to be measured. The first probe having such configuration can ensure favorable electric conductivity with the electrode, by selecting the first material of a good contacting ability with respect to the electrode.

In the second probe of the present invention, the base part of the contact part is formed of an elastic material while the junction part of the contact part is formed of a shape memory alloy.

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The tip end of the base part is contactable with an electrode of the object to be measured. The first probe having such configurations can ensure favorable electric conductivity with respect to the electrode, by selecting the elastic material of a good contacting ability with respect to the electrode.

Further, the junction part of shape memory alloy determines the flexural property of the probe, while the base part of elastic material determines the electric conductivity of the probe. As shape memory alloy does not basically affect the electric conductivity, the contacting ability with respect to the electrode is not a factor in the selection of the shape memory alloy. This is another merit of the second probe.

In the Office Action, Claims 1-2 were rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Maruyama et al. (U.S. Patent No. 6,791,345) and in view of Flechsig et al. (U.S. Patent No. 7,176,703) or Ding et al. (U.S. Patent No. 6,577,147). Reconsideration and removal of this rejection are respectfully requested in view of the present claim amendments and the following remarks.

The Office Action alleges that Maruyama et al. shows the claimed invention in FIG. 18B, and that the contactor shown in FIG. 18B is formed of a bimetal and during thermal expansion, when heat is applied as end of the contactor, it presses against an electrode to be contacted and performs a wiping operation, that is, it is deformed in two directions because of the offset shape of the contactor. In relation to an electrode terminal (as shown in FIG. 19A at 2a), the end of the contactor

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moves in a direction perpendicular to a surface of the electrode terminal, toward the electrode terminal, and also moves in a direction parallel to the surface of the electrode terminal.

It is respectfully submitted that the present claimed invention is distinct and non-obvious from the contactor of Maruyama et al. because the present claimed invention has an almost rectilinear contact part and an almost rectilinear junction part, and the contactor of Maruyama et al. has an offset shape. Thus, the contactor of Maruyama et al. does not deform in the same direction as the present invention. Rectilinear is defined as being made up of a straight line or lines.

Regarding Claim 2 and the use of a "shape memory alloy", the Office Action alleges that a shape memory alloy is inherent to a bimetal. Applicants respectfully disagree. Shape memory alloys are special alloys, such as Ti-Ni, which have a phase change from martensite to austenite during heating. Such alloys are not disclosed in Maruyama et al.

Regarding Flechsig et al., the Office action refers to FIG. 10B. In FIG. 10B, (902) is disclosed as being a shape memory alloy (such as Ti-Ni) and (904) is disclosed as being a conventional metal spring. It is respectfully submitted that the shape of the test probe of Flechsig et al. is not rectilinear, as presently claimed. FIG. 7 is said to show the test probe in the "generally straight" position.

Regarding Ding et al., the Office Action refers to FIG. 3. FIG. 3 is a cross section of the probe shown in FIGS. 2(a)-2(c). FIG. 3 is described as being a shape memory alloy core (11) coated with a highly elastic outer layer (10), such as copper. The effect of the configuration is said to aid restoration of the probe wire from its contracted condition shown in FIG. 2(b) to its original position,

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as shown in FIG. 2(a). It is respectfully submitted that as in the previous references, Ding et al. does not disclose an almost rectilinear contact part and junction part. Also, the arrangement of the core and coating of Ding et al. would not result in the same deformation found in the present invention during heating, as the typical "bimetal" deformation would not occur with the core having the coating on all sides.

In view of the amendments to Claims 1 and 2, and the above remarks, removal of this rejection is respectfully requested.

In view of the aforementioned amendments and accompanying remarks, Claims 1-2, as amended, are believed to be patentable and in condition for allowance, which action, at an early date, is requested.


If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Replacement Drawing Sheets (FIGS. 1-6)